

特許協力条約に基づく国際出願願書

紙面による写し(注意:電子データが原本となります)

| | | |
|-----------|---------------------|--|
| III-1 | その他の出願人又は発明者 | 出願人及び発明者である (applicant and inventor) 米国のみ (US only) 齋藤 栄 SAITO Sakae 2630051 日本国 千葉県千葉市稲毛区園生町 1 3 6 6 - 1 - 1 1 0 4 1366-1-1104, Sonno-cho, Inage-ku, Chiba-shi, Chiba 2630051 Japan |
| III-1-1 | この欄に記載した者は | |
| III-1-2 | 右の指定国についての出願人である。 | |
| III-1-4ja | 氏名(姓名) | |
| III-1-4en | Name (LAST, First): | |
| III-1-5ja | あて名 | |
| III-1-5en | Address: | |
| III-1-6 | 国籍(国名) | 日本国 JP |
| III-1-7 | 住所(国名) | 日本国 JP |
| III-2 | その他の出願人又は発明者 | 出願人及び発明者である (applicant and inventor) 米国のみ (US only) 吉川 逸郎 KIKKAWA Itsuro 2620032 日本国 千葉県千葉市花見川区幕張町 1 - 7 6 7 5 - 1 - 1 2 0 1 1-7675-1-1201, Makuhari-cho, Hanamigawa-ku, Chiba-shi, Chiba 2620032 Japan |
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| III-2-2 | 右の指定国についての出願人である。 | |
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| III-2-4en | Name (LAST, First): | |
| III-2-5ja | あて名 | |
| III-2-5en | Address: | |
| III-2-6 | 国籍(国名) | 日本国 JP |
| III-2-7 | 住所(国名) | 日本国 JP |
| III-3 | その他の出願人又は発明者 | 出願人及び発明者である (applicant and inventor) 米国のみ (US only) 武田 昭信 TAKEDA Akinobu 3292735 日本国 栃木県那須郡西那須野町太夫塚 2 - 2 0 1 - 9 2-201-9, Tayuzuka, Nishinasuno-cho, Nasu-gun, Tochigi 3292735 Japan |
| III-3-1 | この欄に記載した者は | |
| III-3-2 | 右の指定国についての出願人である。 | |
| III-3-4ja | 氏名(姓名) | |
| III-3-4en | Name (LAST, First): | |
| III-3-5ja | あて名 | |
| III-3-5en | Address: | |
| III-3-6 | 国籍(国名) | 日本国 JP |
| III-3-7 | 住所(国名) | 日本国 JP |

特許協力条約に基づく国際出願願書

紙面による写し (注意: 電子データが原本となります)

| | | |
|----------|---|---|
| IV-1 | 代理人又は共通の代表者、通知のあて名 下記の者は国際機関において右記のごとく 出願人のために行動する。 | 代理人 (agent) |
| IV-1-1ja | 氏名(姓名) | 藤本 英介 |
| IV-1-1en | Name (LAST, First): | FUJIMOTO Eisuke |
| IV-1-2ja | あて名 | 1000014 日本国 東京都千代田区永田町二丁目 1 4 番 2 号 山王グラン ドビルディング 3 階 3 1 7 区 |
| IV-1-2en | Address: | c/o Fujimoto Patent & Law Office, Room 317, Sanno Grand Building 3F., 14-2, Nagata-cho 2-chome, Chiyoda-ku, Tokyo 1000014 Japan |
| IV-1-3 | 電話番号 | 03-3593-2361 |
| IV-1-4 | ファクシミリ番号 | 03-3593-2822 |
| IV-1-6 | 代理人登録番号 | 100112335 |
| IV-2 | その他の代理人 | 筆頭代理人と同じあて名を有する代理人 (additional agent(s) with the same address as first named agent) |
| IV-2-1ja | 氏名 | 神田 正義(100101144); 宮尾 明茂(100101694) |
| IV-2-1en | Name(s) | KANDA Masayoshi(100101144); MIYAO Akishige(100101694) |
| V | 国の指定 | |
| V-1 | この願書を用いてされた国際出願は、規則 4.9(a)に基づき、国際出願の時点で拘束さ れる全てのPCT締約国を指定し、取得しうる あらゆる種類の保護を求め、及び該当する 場合には広域と国内特許の両方を求める 国際出願となる。 | |
| VI-1 | 先の国内出願に基づく優先権主張 | |
| VI-1-1 | 出願日 | 2003年 10月 31日 (31.10.2003) |
| VI-1-2 | 出願番号 | 2003-372580 |
| VI-1-3 | 国名 | 日本国 JP |
| VI-2 | 先の国内出願に基づく優先権主張 | |
| VI-2-1 | 出願日 | 2004年 03月 26日 (26.03.2004) |
| VI-2-2 | 出願番号 | 2004-092900 |
| VI-2-3 | 国名 | 日本国 JP |
| VI-3 | 優先権証明書送付の請求 上記の先の出願のうち、右記の番号のもの については、出願書類の認証謄本を作成 し国際事務局へ送付することを、受理官庁 に対して請求している。 | VI-1, VI-2 |
| VII-1 | 特定された国際調査機関(ISA) | 日本国特許庁 (ISA/JP) |

特許協力条約に基づく国際出願願書

紙面による写し(注意:電子データが原本となります)

| | | | |
|--------|-------------------------------------|-------------|------------|
| VIII | 申立て | 申立て数 | |
| VIII-1 | 発明者の特定に関する申立て | — | |
| VIII-2 | 出願し及び特許を与えられる国際出願日における出願人の資格に関する申立て | — | |
| VIII-3 | 先の出願の優先権を主張する国際出願日における出願人の資格に関する申立て | — | |
| VIII-4 | 発明者である旨の申立て(米国を指定国とする場合) | — | |
| VIII-5 | 不利にならない開示又は新規性喪失の例外に関する申立て | — | |
| IX | 照合欄 | 用紙の枚数 | 添付された電子データ |
| IX-1 | 願書(申立てを含む) | 5 | ✓ |
| IX-2 | 明細書 | 14 | ✓ |
| IX-3 | 請求の範囲 | 2 | ✓ |
| IX-4 | 要約 | 1 | ✓ |
| IX-5 | 図面 | 4 | ✓ |
| IX-7 | 合計 | 26 | |
| | 添付書類 | 添付 | 添付された電子データ |
| IX-8 | 手数料計算用紙 | — | ✓ |
| IX-17 | PCT-SAFE 電子出願 | — | — |
| IX-19 | 要約書とともに提示する図の番号 | 1 | |
| IX-20 | 国際出願の使用言語名 | 日本語 | |
| X-1 | 出願人、代理人又は代表者の記名押印 | /100112335/ | |
| X-1-1 | 氏名(姓名) | 藤本 英介 | |
| X-1-2 | 署名者の氏名 | | |
| X-1-3 | 権限 | | |
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| X-2-1 | 氏名(姓名) | 神田 正義 | |
| X-2-2 | 署名者の氏名 | | |
| X-2-3 | 権限 | | |
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| X-3-1 | 氏名(姓名) | 宮尾 明茂 | |
| X-3-2 | 署名者の氏名 | | |
| X-3-3 | 権限 | | |

特許協力条約に基づく国際出願願書

紙面による写し(注意:電子データが原本となります)

受理官庁記入欄

| | | |
|--------|--|--------|
| 10-1 | 国際出願として提出された書類の実際の受理の日 | |
| 10-2 | 図面 | |
| 10-2-1 | 受理された | |
| 10-2-2 | 不足図面がある | |
| 10-3 | 国際出願として提出された書類を補完する書類又は図面であってその後期間内に提出されたものの実際の受理の日(訂正日) | |
| 10-4 | 特許協力条約第11条(2)に基づく必要な補完の期間内の受理の日 | |
| 10-5 | 出願人により特定された国際調査機関 | ISA/JP |
| 10-6 | 調査手数料未払いにつき、国際調査機関に調査用写しを送付していない | |

国際事務局記入欄

| | | |
|------|-----------|--|
| 11-1 | 記録原本の受理の日 | |
|------|-----------|--|

特許協力条約に基づく国際出願願書

紙面による写し(注意:電子データが原本となります)

| | | |
|--------|--|---|
| 0 | 受理官庁記入欄 | |
| 0-1 | 国際出願番号 | |
| 0-2 | 国際出願日 | |
| 0-3 | (受付印) | |
| 0-4 | 様式-PCT/RO/101 この特許協力条約に基づく国際出願願書は、 | |
| 0-4-1 | 右記によって作成された。 | JPO-PAS 0321 |
| 0-5 | 申立て 出願人は、この国際出願が特許協力条約に従って処理されることを請求する。 | |
| 0-6 | 出願人によって指定された受理官庁 | 日本国特許庁 (RO/JP) |
| 0-7 | 出願人又は代理人の書類記号 | FWA4-18 |
| I | 発明の名称 | リフレクタ、光源装置、及び投射型表示装置 |
| II | 出願人 | |
| II-1 | この欄に記載した者は | 出願人である (applicant only) |
| II-2 | 右の指定国についての出願人である。 | 米国を除く全ての指定国 (all designated States except US) |
| II-4ja | 名称 | シャープ株式会社 |
| II-4en | Name: | SHARP KABUSHIKI KAISHA |
| II-5ja | あて名 | 5458522 日本国 |
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| II-6 | 国籍(国名) | 日本国 JP |
| II-7 | 住所(国名) | 日本国 JP |
| II-8 | 電話番号 | 06-6606-5495 |
| II-9 | ファクシミリ番号 | 06-6606-5827 |
| II-11 | 出願人登録番号 | 000005049 |

APPROVED 23 APR 2006

<The Amendment under PCT Article 34 made on July 6, 2005>

Written Amendment

(Amendment made based on Article 11 of Law Concerning the International Application of the Patent Cooperation Treaty and Related Matters, equivalent to Article 34 (2) (b) of Patent Cooperation Treaty)

To Commissioner of the Patent Office
(To Examiner Kouichi HOSHINO)

1. Indication of the International Application

PCT/JP2004/15487

2. Applicant

Name: SHARP KABUSHIKI KAISHA

Address: 22-22, Nagaike-cho, Abeno-ku, Osaka-shi,
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Country of residence: JAPAN

3. Agent

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100-0014 JAPAN

4. Object to be amended (1) Claims

5. Content of the amendment

(1) In Claim 1, "a predetermined wavelength" on line 17 is
5 replaced by "the predetermined wavelength".

(1) Claim 2 is totally replaced by

"A reflector comprising:

a discharge-type arc tube emitting light;

10 a heat radiating means composed of a concave mirror shaped
substrate having a thermal conductivity of $10 \text{ W/m} \cdot \text{K}$ or greater;

15 a light-to-heat converting component arranged on the
light-reflecting surface side of the heat radiating means
for absorbing light of a predetermined wavelength range,
radiated from the discharge-type arc tube and converting it
to heat;

a specific wavelength range reflecting component which
reflects light of a specific wavelength range onto the
light-to-heat converting component and permits light of the
predetermined wavelength range to pass therethrough; and

20 a buffering component consisting of an organic resin,
disposed between the light-to-heat converting component and
the specific wavelength range reflecting component for
buffering so that the light-to-heat converting component and
the specific wavelength range reflecting component will not
25 come in direct contact with each other and for permitting

light of the predetermined wavelength range that passes through the specific wavelength range reflecting component to pass therethrough".

(2) In Claim 3, before "over the joined interface where the light-to-heat converting component and the heat radiating means are joined" on lines 2~4, "the light-to-heat converting component, the buffering component and the specific wavelength range reflecting component are laminated in the order mentioned over the reflective surface of the heat radiating means and joined in surface contact with one another; and" is inserted, and after "over the entire, joined interface" on line 2, "to diffuse light of a specific wavelength range so that the reflected light will not concentrate on a particular point" is inserted.

(3) In Claim 4, "Claim 2" on line 1 is replaced by "Claim 1, 2 or 3", and after "over the buffering component-side surface" on lines 2-3, "over the entire surface, so that light of a specific wavelength range that could not be absorbed but was reflected will be made incident once again on the light-to-heat converting component and so that light that could not be absorbed but was reflected will not concentrate on a particular point" is inserted.

(4) In Claim 5, "a substrate having a thermal conductivity of 10 W/m·K or greater" on lines 2-3 is replaced by "an aluminum substrate".

(5) In Claim 6, "Claims 2 to 5" on line 1 is replaced by "Claims 1 to 5".

(7) In Claim 7, "Claims 2 to 6" on line 1 is replaced by "Claims 1 to 6".

5 (8) Claim 8 is deleted

(9) In Claim 9, "Claims 1 to 8" on line 2 is replaced by "Claims 1 to 7".

6. List of the appended documents:

(1) Claims after amendment

10 Pages to 32 to 35 One copy for each

CLAIMS

[1] (After amendment) A reflector comprising:

a heat radiating means composed of a concave mirror-shaped substrate;

5 a light-to-heat converting component arranged on the light-reflecting surface side of the heat radiating means for absorbing light of a predetermined wavelength range to converting it to heat;

10 a specific wavelength range reflecting component which reflects light of a specific wavelength range onto the light-to-heat converting component and permits light of the predetermined wavelength range to pass therethrough; and

15 a buffering component disposed between the light-to-heat converting component and the specific wavelength range reflecting component for buffering so that the light-to-heat converting component and the specific wavelength range reflecting component will not come in direct contact with each other and for permitting light of the predetermined wavelength range that passes through the specific wavelength range reflecting component to pass therethrough.

20 [2] (After amendment) A reflector comprising:

a discharge-type arc tube emitting light;

a heat radiating means composed of a concave mirror shaped substrate having a thermal conductivity of $10 \text{ W/m} \cdot \text{K}$ or greater;

25 a light-to-heat converting component arranged on the

light-reflecting surface side of the heat radiating means for absorbing light of a predetermined wavelength range, radiated from the discharge-type arc tube and converting it to heat;

5 a specific wavelength range reflecting component which reflects light of a specific wavelength range, radiated from the discharge-type arc tube onto the light-to-heat converting component and permits light of the predetermined wavelength range to pass therethrough; and

10 a buffering component consisting of an organic resin, disposed between the light-to-heat converting component and the specific wavelength range reflecting component for buffering so that the light-to-heat converting component and the specific wavelength range reflecting component will not
15 come in direct contact with each other and for permitting light of the predetermined wavelength range that passes through the specific wavelength range reflecting component to pass therethrough.

[3] (After amendment) The reflector according to Claim 1 or
20 2, wherein the light-to-heat converting component, the buffering component and the specific wavelength range reflecting component are laminated in the order mentioned over the reflective surface of the heat radiating means and joined in surface contact with one another; and projections
25 and indentations are formed over the entire, joined interface

where the light-to-heat converting component and the heat radiating means are joined, to diffuse light of a specific wavelength range so that the reflected light will not concentrate on a particular point.

5 [4] (After amendment) The reflector according to Claim 1, 2 or 3, wherein projections and indentations are formed over the entire, buffering component side surface of the light-to-heat converting component, so that light of a specific wavelength range that could not be absorbed but was
10 reflected will be made incident once again on the light-to-heat converting component and so that light that could not be absorbed but was reflected will not concentrate on a particular point.

[5] (After amendment) The reflector according to any one of
15 Claims 1 to 4, wherein the heat radiating means is composed of an aluminum substrate and also provides the function of the light-to-heat converting component.

[6] (After amendment) The reflector according to any one of
20 Claims 1 to 5, wherein the light-to-heat converting component is formed by anodizing aluminum in an aqueous solution of chromic anhydride.

[7] (After amendment) The reflector according to any one of
Claims 1 to 6, wherein the buffering component is film-formed on the light-absorbing surface side of the light-to-heat
25 converting component by calcining Si resin or polyimide resin

at high temperatures.

[8] (Deleted)

[9] (After amendment) A light source device including a reflector according to any one of claims 1 to 7, in addition
5 to a light source.

[10] A projection display apparatus including a light source device according to Claim 9.

10/577188

Filed for International Publication 2006

<The Amendment under PCT Article 34 made on November 18, 2005>

Written Amendment

(Amendment made based on Article 11 of Law Concerning the International Application of the Patent Cooperation Treaty and Related Matters, equivalent to Article 34 (2) (b) of Patent Cooperation Treaty)

To Commissioner of the Patent Office
(To Examiner Kouichi HOSHINO)

1. Indication of the International Application

PCT/JP2004/015487

2. Applicant

Name: SHARP KABUSHIKI KAISHA

Address: 22-22, Nagaike-cho, Abeno-ku, Osaka-shi,
Osaka 545-8522 JAPAN

Country of nationality: JAPAN

Country of residence: JAPAN

3. Agent

Name: 11233 Patent Attorney FUJIMOTO Eisuke

Address: c/o Fujimoto Patent & Law Office
Room 317, Sanno Grand Building 3F.,
14-2, Nagata-cho 2-chome, Chiyoda-ku, Tokyo
100-0014 JAPAN

AP20 REC'D FGTPTD 25 APR 2006

4. Object to be amended (1) Claims

5. Content of the amendment (cf. Appended paper)

(1) In Claim 1, "range reflecting component to pass

therethrough" on line 19 is replaced by "range reflecting
component to pass therethrough,

the reflector being characterized in that the light-to-heat
converting component, the buffering component and the specific
wavelength range reflecting component are laminated in the

order mentioned over the reflective surface of the heat
radiating means and joined in surface contact with one another,
and projections and indentations are formed over the entire,
joined interface where the light-to-heat converting component
and the heat radiating means are joined, to diffuse light
of a specific wavelength range so that the reflected light
will not concentrate on a particular point".

(2) In Claim 2, "to pass therethrough" on line 23 is replaced
by "to pass therethrough,

the reflector being characterized in that the light-to-heat
converting component, the buffering component and the specific
wavelength range reflecting component are laminated in the
order mentioned over the reflective surface of the heat
radiating means and joined in surface contact with one another,
and projections and indentations are formed over the entire,
joined interface where the light-to-heat converting component

and the heat radiating means are joined, to diffuse light of a specific wavelength range so that the reflected light will not concentrate on a particular point".

5 (3) In Claim 3, "the light-to-heat converting component, ... so that the reflected light will not concentrate on a particular point" on lines 2 to 23 is replaced by "projections and indentations are formed over the entire, buffering component side surface of the light-to-heat converting component, so that light of a specific wavelength range that could not be
10 absorbed but was reflected will be made incident once again on the light-to-heat converting component and so that light that could not be absorbed but was reflected will not concentrate on a particular point".

(4) In Claim 4, " The reflector according to Claim 1, 2 or
15 3, wherein" on lines 1 to 2 is replaced by "A reflector comprising:

a heat radiating means composed of a concave mirror-shaped substrate;

20 a light-to-heat converting component arranged on the light-reflecting surface side of the heat radiating means for absorbing light of a predetermined wavelength range to converting it to heat;

a specific wavelength range reflecting component which reflects light of a specific wavelength range onto the
25 light-to-heat converting component and permits light of the

predetermined wavelength range to pass therethrough; and

a buffering component disposed between the light-to-heat converting component and the specific wavelength range reflecting component for buffering so that the light-to-heat

5 converting component and the specific wavelength range reflecting component will not come in direct contact with each other and for permitting light of the predetermined wavelength range that passes through the specific wavelength range reflecting component to pass therethrough,

10 the reflector being characterized in that".

(5) Claim 5 is totally replaced by

"A reflector comprising:

a discharge-type arc tube emitting light;

15 a heat radiating means composed of a concave mirror shaped substrate having a thermal conductivity of $10 \text{ W/m} \cdot \text{K}$ or greater;

a light-to-heat converting component arranged on the light-reflecting surface side of the heat radiating means for absorbing light of a predetermined wavelength range, radiated from the discharge-type arc tube and converting it
20 to heat;

a specific wavelength range reflecting component which reflects light of a specific wavelength range, radiated from the discharge-type arc tube onto the light-to-heat converting component and permits light of the predetermined wavelength
25 range to pass therethrough; and

a buffering component consisting of an organic resin, disposed between the light-to-heat converting component and the specific wavelength range reflecting component for buffering so that the light-to-heat converting component and the specific wavelength range reflecting component will not come in direct contact with each other and for permitting light of the predetermined wavelength range that passes through the specific wavelength range reflecting component to pass therethrough,

the reflector being characterized in that projections and indentations are formed over the entire, buffering component side surface of the light-to-heat converting component, so that light of a specific wavelength range that could not be absorbed but was reflected will be made incident once again on the light-to-heat converting component and so that light that could not be absorbed but was reflected will not concentrate on a particular point".

(6) In Claim 6, "the light-to-heat converting component is ... chromic anhydride" on lines 2 to 4 is replaced by "the heat radiating means is composed of an aluminum substrate and also provides the function of the light-to-heat converting component".

(7) In Claim 7, "the buffering component is ... at high temperatures" on lines 2 to 5 is replaced by "the light-to-heat converting component is formed by anodizing aluminum in an

aqueous solution of chromic anhydride".

(8) Added as Claim 8 is "The reflector according to any one of Claims 1 to 7, wherein the buffering component is film-formed on the light-absorbing surface side of the light-to-heat converting component by calcining Si resin or polyimide resin at high temperatures".

(9) In Claim 9, "Claims 1 to 7" on line 2 is replaced by "Claims 1 to 8".

6. List of the appended documents:

(1) Claims after amendment

Pages to 32 to 37

One copy for each

CLAIMS

[1] (After amendment) A reflector comprising:

a heat radiating means composed of a concave mirror-shaped substrate;

5 a light-to-heat converting component arranged on the light-reflecting surface side of the heat radiating means for absorbing light of a predetermined wavelength range to converting it to heat;

10 a specific wavelength range reflecting component which reflects light of a specific wavelength range onto the light-to-heat converting component and permits light of the predetermined wavelength range to pass therethrough; and

15 a buffering component disposed between the light-to-heat converting component and the specific wavelength range reflecting component for buffering so that the light-to-heat converting component and the specific wavelength range reflecting component will not come in direct contact with each other and for permitting light of the predetermined wavelength range that passes through the specific wavelength range reflecting component to pass therethrough,

20 the reflector being characterized in that the light-to-heat converting component, the buffering component and the specific wavelength range reflecting component are laminated in the order mentioned over the reflective surface of the heat radiating means and joined in surface contact with one another,

25

and projections and indentations are formed over the entire, joined interface where the light-to-heat converting component and the heat radiating means are joined, to diffuse light of a specific wavelength range so that the reflected light will not concentrate on a particular point.

[2] (After amendment) A reflector comprising:

a discharge-type arc tube emitting light;

a heat radiating means composed of a concave mirror shaped substrate having a thermal conductivity of $10 \text{ W/m} \cdot \text{K}$ or greater;

a light-to-heat converting component arranged on the light-reflecting surface side of the heat radiating means for absorbing light of a predetermined wavelength range, radiated from the discharge-type arc tube and converting it to heat;

a specific wavelength range reflecting component which reflects light of a specific wavelength range, radiated from the discharge-type arc tube onto the light-to-heat converting component and permits light of the predetermined wavelength range to pass therethrough; and

a buffering component consisting of an organic resin, disposed between the light-to-heat converting component and the specific wavelength range reflecting component for buffering so that the light-to-heat converting component and the specific wavelength range reflecting component will not come in direct contact with each other and for permitting

light of the predetermined wavelength range that passes through the specific wavelength range reflecting component to pass therethrough,

the reflector being characterized in that the light-to-heat converting component, the buffering component and the specific wavelength range reflecting component are laminated in the order mentioned over the reflective surface of the heat radiating means and joined in surface contact with one another, and projections and indentations are formed over the entire, joined interface where the light-to-heat converting component and the heat radiating means are joined, to diffuse light of a specific wavelength range so that the reflected light will not concentrate on a particular point.

[3] (After amendment) The reflector according to Claim 1 or 2, wherein projections and indentations are formed over the entire, buffering component side surface of the light-to-heat converting component, so that light of a specific wavelength range that could not be absorbed but was reflected will be made incident once again on the light-to-heat converting component and so that light that could not be absorbed but was reflected will not concentrate on a particular point.

[4] (After amendment) A reflector comprising:

a heat radiating means composed of a concave mirror-shaped substrate;

a light-to-heat converting component arranged on the

light-reflecting surface side of the heat radiating means for absorbing light of a predetermined wavelength range to converting it to heat;

5 a specific wavelength range reflecting component which reflects light of a specific wavelength range onto the light-to-heat converting component and permits light of the predetermined wavelength range to pass therethrough; and

10 a buffering component disposed between the light-to-heat converting component and the specific wavelength range reflecting component for buffering so that the light-to-heat converting component and the specific wavelength range reflecting component will not come in direct contact with each other and for permitting light of the predetermined wavelength range that passes through the specific wavelength range reflecting component to pass therethrough,

15 the reflector being characterized in that projections and indentations are formed over the entire, buffering component side surface of the light-to-heat converting component, so that light of a specific wavelength range that could not be absorbed but was reflected will be made incident once again

20 on the light-to-heat converting component and so that light that could not be absorbed but was reflected will not concentrate on a particular point.

[5] (After amendment) A reflector comprising:

25 a discharge-type arc tube emitting light;

a heat radiating means composed of a concave mirror shaped substrate having a thermal conductivity of $10 \text{ W/m} \cdot \text{K}$ or greater;

a light-to-heat converting component arranged on the light-reflecting surface side of the heat radiating means for absorbing light of a predetermined wavelength range, radiated from the discharge-type arc tube and converting it to heat;

a specific wavelength range reflecting component which reflects light of a specific wavelength range, radiated from the discharge-type arc tube onto the light-to-heat converting component and permits light of the predetermined wavelength range to pass therethrough; and

a buffering component consisting of an organic resin, disposed between the light-to-heat converting component and the specific wavelength range reflecting component for buffering so that the light-to-heat converting component and the specific wavelength range reflecting component will not come in direct contact with each other and for permitting light of the predetermined wavelength range that passes through the specific wavelength range reflecting component to pass therethrough,

the reflector being characterized in that projections and indentations are formed over the entire, buffering component side surface of the light-to-heat converting component, so that light of a specific wavelength range that could not be

absorbed but was reflected will be made incident once again on the light-to-heat converting component and so that light that could not be absorbed but was reflected will not concentrate on a particular point.

5 [6] (After amendment) The reflector according to any one of Claims 1 to 5, wherein the heat radiating means is composed of an aluminum substrate and also provides the function of the light-to-heat converting component.

10 [7] (After amendment) The reflector according to any one of Claims 1 to 6, wherein the light-to-heat converting component is formed by anodizing aluminum in an aqueous solution of chromic anhydride.

15 [8] (After amendment) The reflector according to any one of Claims 1 to 7, wherein the buffering component is film-formed on the light-absorbing surface side of the light-to-heat converting component by calcining Si resin or polyimide resin at high temperatures.

20 [9] (After amendment) A light source device including a reflector according to any one of claims 1 to 8, in addition to a light source.

[10] A projection display apparatus including a light source device according to Claim 9.